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| 09/548,414      | 04/13/2000  | Takahiro Oguchi      | P/1071-985          | 7261             |

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12/31/2002

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| EXAMINER |
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GARCIA, JOANNIE A

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| ART UNIT | PAPER NUMBER |
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2823

DATE MAILED: 12/31/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/548,414

Applicant(s)

OGUCHI, TAKAHIRO

Examiner

Joannie A Garcia

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 October 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3, 5 and 9-16 is/are pending in the application.
- 4a) Of the above claim(s) 5 and 13-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 9-12 and 16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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Newly submitted claims 5, and 13-15, are directed to an invention that is independent or distinct from the invention originally claimed for the following reasons: Newly submitted claims 5, 13, 14, and 15, are directed to originally filed claims 5, 4, 6, and 8, respectively, which have been previously restricted in the Office Action mailed 9-25-01.

Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 5, and 13-15, are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim 16 is objected to because of the following informalities: In claim 16, line 5, "substrate element" after "forming a recess in a surface of the" should be replaced with --element substrate--. Appropriate correction is required.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 16 recites the limitation "membrane" in line 11. There is insufficient antecedent basis for this limitation in the claim.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-3, 9-12, and 16, are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art in combination with Cleeves.

Applicant's admitted prior art discloses manufacturing an external force detection sensor (Page 1, lines 9-11, and Page 4, lines 5-7) comprising providing an element substrate 3, providing<sup>di</sup> a support substrate 2 (Figure 7C), forming a recess 16 in a surface of the element substrate, forming an etching stop layer 18 on the surface of the element substrate having the recess formed therein, joining the back surface side of said element substrate with the surface of the support substrate having said recess formed therein, forming a sensor element including a vibrating body 5 (Figure 7D), fixed electrodes 10 (Page 5, lines 5-6), and movable electrodes 13 (Page 5, line 5) on the element substrate by dry etching (Page 4, lines 25-28, through Page 5, lines 1-7), removing the etching stop layer (Figure 7E, and Page 5, line 12), and completing the manufacturing of the external force detection sensor. Applicant's admitted prior art teaches as well, manufacturing an external force detection sensor (Page 1, lines 9-11, and Page 4, lines 5-7) comprising forming a recessed part 16 on a back surface 3b of a silicon material element substrate 3 (Figure 7A, Page 1, lines 15-16, and Page 4, lines 5-7), forming a membrane 17 on a face side (Figure 7A), providing an etching stop layer 18 on a top surface of the recessed part of said element substrate (Figure 7B), anodically joining the back surface side of said element substrate with a glass material support substrate 2 (Figure 7C, Page 1, line 17, and Page 4, lines 5-7), and forming a sensor element including a vibrating body 5 (Figure 7D), fixed electrodes 10

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(Page 5, lines 5-6) and movable electrodes 13 (Page 5, line 5), by dry etching of the membrane of said element substrate (Figure 7D, Page 4, lines 25-28 through Page 5, lines 1-10), removing the etching stop layer (Figure 7E), and completing the manufacturing of the external force detection sensor.

Applicant argues that applicant's admitted prior art does not teach using an electrically conductive material as the etch stop layer. However, applicant's admitted prior art is not relied upon for that purpose.

Applicant argues that Cleeves is not directed to a method of manufacturing an external force detection sensor, and that the etch stop layer of Cleeves is not removed. However, Cleeves is not relied upon for that purpose.

Applicant argues that Cleeves teaches that the etch stop layer is made of metal to form a local interconnect. However, Cleeves discloses that etch stop layer 214 of may be used to form a local interconnect, but also prevents etchants from etching underlying layers of materials, and may also provide an adhesive interface between conductive materials and dielectric layers (Column 4, lines 24). Furthermore, Cleeves discloses that etch stop layer 214 can be made of metals such as titanium, zirconium, hafnium, chromium, molybdenum, tungsten, and alloys thereof; of oxides, nitrides and oxynitrides of such metals or of Si, such as silicon dioxide, silicon nitride, silicon oxynitride; and of silicides such as tungsten silicide and titanium silicide (Column 4, lines 15-20), therefore achieving formation of an etch stop layer formed of either a metal, such as titanium, or an insulating material, such as silicon dioxide.

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Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0956. See **MPEP 203.08**.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to examiner J. Garcia whose telephone number is (703) 306-5733. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (703) 306-2794. The fax number for this group is (703) 308-7722 (and 7724), and (703) 305-3431 (and 3432). MPEP 502.01 contains instructions regarding procedures used in submitting responses by facsimile transmission.

  
JAG  
12/28/02

  
George Fourson  
Primary Examiner  
2823